

ICAF2017

Poster Session

Wednesday June 7

Room B

- W1 **A Macro-micro Coupled Fatigue Crack Initiation Life Predictive Method for Variable Amplitude Loadings**
Xiaoran Liu¹, Qin Sun¹, Xianmin Chen^{1,2}
¹Northwestern Polytechnical University, China, ²AVIC Aircraft Strength Research Institute, China
- W2 **Experimental Measurement of Small Crack Stress Intensity Factors: Their Comparison to Analytical Solutions and Effects on Fatigue Crack Growth Rates**
Sandeep Shah¹, Jaspreet Singh²
¹Sabreliner Aviation LLC, USA, ²United States Air Force Academy, USA
- W3 **Impact Fatigue Life Prediction of Notched alloy-steel Specimen at High Strain Rates**
Qin Sun, Xiaoran Liu, Ke Liang
Northwestern Polytechnical University, China
- W4 **Thermal Concentration Fluctuations in CFRP Structures Caused by Lightning Strike**
Yasunori Sato, Hiroyuki Tsubata, Takayuki Nishi
SUBARU Corporation, Japan
- W5 **A Method of Fatigue Quality Determination for Splice Fastener Joints Under Multiaxial Fatigue Loading**
Xu Wang, Wuxue Zhu
Shanghai Aircraft Design & Research Institute, COMAC, China
- W6 **Reliability Life Evaluation Method of Roller Wheels Based on Contact Stress**
Baocai Pang, Jiangjing Xi, Dengke Dong
AVIC Aircraft Strength Research Institute, China
- W7 **Tokyo Metropolitan University - JAXA Collaborative Research on Composite Wing Structures**
Hikaru Hoshi, ²Naoyuki Watanabe, ¹Sunao Sugimoto, ¹Yutaka Iwahori
¹Japan Aerospace Exploration Agency, Japan, ²Tokyo Metropolitan University, Japan
- W8 **Failure Analysis and Test of the Composite Elevator Trailing Edge Structure**
Xiuhua Chen
Shanghai Jiao Tong University, China
- W9 **Fatigue Test Trial of CFRP Coupon Specimens**
Hisaya Katoh¹, Toshio Ogasawara²
¹Japan Aerospace Exploration Agency, Japan, ²Tokyo University of Agriculture and Technology,
- W10 **A Novel Composite-Metal Joint and Its Mechanical Performance and Fracture Behavior**
Longquan Liu, Huaqing Tang, Han Feng
Shanghai Jiao Tong University, China
- W11 **Stress Analysis of Refill Friction Stir Spot Welding – An Analytical, Numerical and Experimental Investigation**
Robson Cristiano Brzostek, Uceu Suhuddin
Helmholtz-Zentrum Geesthacht GmbH, Germany
- W12 **Damage Tolerance in CFRP Structures - Numerical and Experimental Analysis of Low Energy Near Edge Impacts**
Viola Ristori^{1,2}, Enrico Troiani¹, Maria Pia Falaschetti¹, Goran Ivetic³
¹University of Bologna, Italy, ²Sii Deutschland, Germany, ³Augsburg University of Applied Sciences, Germany
- W13 **Application of Bayesian Method to Determining a Simple Reliability Index on Composite Material Strength**
Seiichi Ito, Hisaya Katoh, Hikaru Hoshi
Japan Aerospace Exploration Agency, Japan

- W14 **Fatigue Modeling for Intralaminar Damage Evolution in Composite Laminates Based on Damage State Variables**
Tomohiro Yokozeki, Ryoma Aoki
The University of Tokyo, Japan
- W15 **3D Crack Propagation Testing and Modeling in Thick Aluminum 2024 T351**
Elise Lamic¹, Frank Hofmann², Pierre Madelpech¹
¹*DGA Aeronautical systems, France*, ²*WIWeB, Germany*
- W16 **Fatigue Crack Growth Behaviour in 2324-T39 Aluminium Alloy under Spectrum Loading: Experiments and Simulation**
 Yamei Niu, Rui Bao, Binchao Liu, Ting Zhang, Songsong Lu, Kai Wang, Binjun Fei
Beihang University, China
- W17 **Automation of Quantitative Fractography for Determination of Fatigue Crack Growth Rates with Marker Loads**
Weiping Hu¹, Arnold Wiliem², Brian Lovell², Simon Barter¹, Liangchen Liu²
¹*Defence Science and Technology Group, Australia*, ²*The Univeristy of Queensland, Australia*
- W18 **Visualization of Strain Distribution and Portent of Destruction in Structural Material through Mechanoluminescence**
Nao Terasaki, Yuki Fujio, Yoshitaro Sakata
National Institute of Advanced Industrial Science and Technology, Japan
- W19 **Fatigue Life Prediction of CFRP Laminate of Transport Airplane Wing Upper Surface**
Vitaly Strizhius
JSC AeroComposite, Russia
- W20 **Determination of Loads Acting on the Structure of an Aircraft Using Canonical Correlation Mapping of Flight Parameters**
 Michal Dziendzikowski, Marcin Kurdelski, Wojciech Zielinski, Piotr Reymer, Michal Salacinski, Piotr Synaszko, Krzysztof Dragan
Air Force Institute of Technology, Poland
- W21 **Fatigue Buckling Evaluation and Post-Buckling Analysis of Stiffened Panel on Pure Shear**
Shaopu Su, Hulin Wang, Wenkui Chang, Dengke Dong
AVIC, China
- W22 **Life Prediction by Simulation of Transverse Crack Initiation in CFRTP Laminates under Fatigue Loading**
Atsushi Hosoi¹, Taichi Watanabe¹, Akiya Ozeki¹, Motoki Terauchi¹, Akira Kobiki², Hiroyuki Kawada¹
¹*Waseda University, Japan*, ²*IHI Corporation, Japan*
- W23 **A State-based Peridynamics Method for the Stability Analysis of Leading Edge of Aircraft Wing**
Yin Yu¹, Wu Xu¹, Lu-yan Sun², Xiuhua Chen¹
¹*Shanghai Jiao Tong University, China*, ²*Commercial Aircraft Corporation of China, Ltd., China*,
- W24 **Crack Prevention Design Research of Integral Stiffened Panel**
Zhifang Liu, Xiuwen Sun, Shaobo Gong, Jinliang Wang, Wengang Hu, Hulin Wang, Kexiao Zhang, Tiejun Shen
AVIC, Harbin Aircraft Industry Group Co.,LTD, China
- W25 **Research on Acoustic Fatigue Analysis Method for Typical Civil Aircraft Structure**
Yu Wang, Zhendong Hu, Jiazhen Zhang
Beijing Aeronautical Science and Technology Research Institute of COMAC, China
- W26 **Fatigue Life Assessment of Welded Joints under Step Loading Using Equivalent Crack Length Method**
Takao Murakami, Yoichi Yamashita
IHI Corporation, Japan
- W27 **Research on Fatigue Behavior and Fatigue Mechanisms of Martensite Stainless Steel**
Junling Fan, Wendong Zhang, Xianmin Chen, Hong Chen
Aircraft Strength Research Institute of China, China
- W28 **Experimental and Analytical Study of Structural Strength in Case of Wide Spread Fatigue Damages**
Boris Nestrenko¹, Grigory I. Nestrenko²

¹ National Research Center "Zhukovsky Institute", Russia, ² Central Aerohydrodynamic Institute, Russia

W29

An Engineering Calculation Method of Probability Distribution of Crack Initiation Life for Widespread Fatigue Damage

Wei Xi, Jianjun Zhao

Shanghai Aircraft Design and Research Institute, China

W30

Residual Strength Evaluation for Single and Mix Damage of Composite Laminates

Zejiang Li¹, Qi Zhao¹, Xitao Zheng²

¹ Shanghai Aircraft Design and Research Institute, China, ² Northwest Polytechnical University, China

W31

Arresting Fatigue Crack in Composite Bonded Joint using Fiber-Reinforcement Design Feature

Shu Minakuchi, Nobuo Takeda

The University of Tokyo, Japan

Room B

- T1 **Improving Fatigue Performance of AA 2024-T3 Clad Aeronautical Riveted Lap-Joints Using Laser-Peening**
David Osman Busse¹, P.E. Irving¹, S. Ganguly¹, Domenico Furfari², Claudia Polese³
¹ Cranfield University, United Kingdom, ² Airbus Operations GmbH, Germany, ³ University of the Witwatersrand, South Africa
- T2 **Early Detection of Damage to the Nickel-Based Alloys using Nondestructive Methods**
Józef Krysztofik
Institute of Aviation, Poland
- T3 **Experiences on a Probability of Detection Project**
Jouni Pirtola, Alekski Kunnari
Patria Aviation, Finland
- T4 **Application of Interface Guided Waves for Structural Health Monitoring of Hybrid Bonded**
Mark Jahanbin^{1,2}, S. Santhanam², J.-B. Ihn¹
¹ The Boeing Company, USA, ² Villanova University
- T5 **Non-linear Dynamic Analysis for the Lateral Vibration of Beams with Breathing Crack under Harmonic Excitation Using Finite Element Method**
Berkay Ozkan, E. Cigeroglu, G. Ozgen, F. Suat Kadioglu
Middle East Technical University, Turkey
- T6 **C-135 Fuel Transfer Pipe Loads Monitoring, Tests and Simulations**
Bastien Bayart, Joseph Despujols, Antoine Bisson
DGA Aeronautical Systems, France
- T7 **Distributed Sensing Optical Fibres for Loads Monitoring during Full Scale Fatigue Testing**
Robert Rutledg, D.S. Backman, A. Lehman Rubio
National Research Council, Canada
- T8 **Understanding the Structural Usage of Rotary-wing Aircraft in a Military Environment**
Steve Reed
Defence Science and Technology Laboratory, United Kingdom
- T9 **Airworthiness Monitoring of the Wings of a UAV Fleet Using Fiber Optic Distributed Sensing**
I. Kressel¹, O. Shapira¹, U. Ben-Simon¹, A. Bergman², S. Shoham¹, B. Glam¹, Moshe Tur²
¹ Israel Aerospace Industries, Israel, ² Tel-Aviv University, Israel
- T10 **A Research on the Vertical Tail Buffet Fatigue Load Sequence Generation Technology from the Advanced Aircraft Flight and Wind Tunnel Test Data**
Hu Huang, Wei Jin, Yuan-Fang Chen, Huan-Bing Fu
Chengdu Aircraft Design & Research Institute, AVIC, China
- T11 **Full Scale Strength Tests of the XP-1 Aircraft**
Yasuhiro Kanno, Toshimitsu Hayashi
Acquisition, Technology & Logistics Agency (ATLA), Japan
- T12 **Service Life Extension Program Based on Operational Load Monitoring System and Durability Test of the Ageing Fighter-Bomber Jet**
Marcin Kurdelski, Piotr Reymer, Michał Stefaniuk, Artur Kurnytar
Air Force Institute of Technology, Poland
- T13 **Investigation of Fastener Hole Salvaging on the Fatigue Life of a Combat Aircraft Centre Fuselage**
Geoff Swanton¹, Richard Mazeika², Zahi Hajjar³
¹ Defence Science and Technology Group, Australia, ² FortburnPty Ltd, Australia, ³ L-3 Military Aviation Services, Canada
- T14 **Bayesian Approach Based Probability Fatigue Life Prediction Method Under Random Load Spectrum**
Shaozhen Pan, Xiaodong Liu, Jiang Dong
Chengdu Aircraft Design & Research Institute, AVIC, China

- T15 **Microstructural Analysis, Fracture Toughness and Fatigue Life of AA7050-T7451 and AA2050-T84 Alloys**
 Fernando Antônio Pascoal Junior¹, Giorgia Taiacol Aleixo¹, Carlos Eduardo Chaves¹, Waldek Wladimir Bose Filho²
¹ Embraer, Brazil, ² EESC-USP, Brazil
- T16 **On the Control of Aircraft Structural Service Life**
Yu-Ting He, Xu Du, Rong-Hong Cui, Teng Zhang, Sheng Zhang
 Air Force Engineering University, China
- T17 **Corrosion Fatigue Pit-to-Crack Test Methodology**
 Justin Rausch, Sarah Galyon Dorman, Scot Fawaz
 SAFE Inc., USA
- T18 **Experimental and Numerical Investigations of the Influence of Multiple Site Damage on the Fatigue Life of Corroded Aluminum Structures**
Pascal Hamel, Elise Lamic
 DGA Aeronautical Systems, France
- T19 **Verification and Validation of Analytical Methods to Determine Life Improvement Factor Induced by Engineered Residual Stresses**
Guillaume Renaud, Min Liao, Gang Li
 National Research Council, Canada
- T20 **Experimental and Numerical Study of NACA and Conventional Riveting Procedure**
Wojciech Wronicz, Jerzy Kaniowski, Maciej Malicki, Paweł Kucio and Robert Klewicki
 Institute of Aviation, Poland
- T21 **Application of Deep Surface Rolling in Improving Fatigue Crack Growth Life of Aircraft Fuselage Structures**
Liu Yao, P.E. Irving, Supriyo Ganguly
 Cranfield University, United Kingdom
- T22 **Effects of Surface Treatment on Residual Stress and Fatigue Life of Aerospace Alloys**
Muhammad Kashif Khan¹, Mike Fitzpatrick¹, Young Shik Pyoun²,
¹ Coventry University, United Kingdom, ² Sun Moon University, Korea
- T23 **An Amphibian and the Concept of Its Derivative Model for Fire-fighting Application**
 Katsuo Tanaka, Atsuhiko Fujitani, Yushi Goda, Masatoshi Tsujii
 ShinMaywa Industries, Ltd., Japan
- T24 **The Influence of Laser Surface Treatment on the Fatigue Crack Growth of an Aluminium Alloy Sheet**
Mauricio C. Cunha^{1,2}, Carlos E. Chaves² and Milton S.F. Lima^{1,3}
¹ ITA, Brazil, ² Embraer, Brazil, ³ IEAv, Brazil
- T25 **Mechanical Testing of Spherical Bearings with Focus on Wear and Coefficient of Friction Measurement**
 Jens Hornschuh, Silvio Nebel
 Institut für Materialforschung und Anwendungstechnik, Germany
- T26 **Equivalent Conversion and Experimental Verification of Accelerated Corrosion of Dissimilar Metal Joints in Aircraft**
Yueliang Chen, Andong Wang, Guixue Bian, Yong Zhang
 Qingdao Branch, Naval Aeronautical Engineering Institute, Qingdao China
- T27 **Structural Restoration Viability Using Cold Spray Technology**
 Saravanan Arunachalam, Scot Fawaz
 SAFE Inc., USA
- T28 **Influence of Thickness and Hole Diameter on Mutual Interaction of Two Opposing Cracks at a Hole**
Carmel Matias, Amran Yogev
 Israel Aerospace Industries, Israel
- T29 **High Cycle Fatigue Behavior of Laser Beam Welded Ti-6Al-4V Butt Joints Subjected to Postweld Heat Treatment**
Fedor Fomin, Volker Ventzke, Nikolai Kashaev

T30

Helmholtz-Zentrum Geesthacht, Germany

Nonlinear Deformation and Fracture of Laminated Composites

Evgeny Lomakin¹, Boris Fedulov², Alexey Fedorenko²

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